In the Claims:

1. – 4. (Cancelled)

5. (Currently Amended) A biomaterial formed from the cross-linking of two or more precursor components, wherein at least one of said precursor components has the formula:

D-Y-C(O)-$(CH_2)_n$-S-$(CH_2)_2$-CO-X-P,

D-Y-C(O)-$(CH_2)_n$-NH-$(CH_2)_2$-CO-X-P,

D-Y-C(O)-$(CH_2)_n$-NH-U-P,

D-Y-C(O)-$(CH_2)_n$-S-U-P,

D-Y-C(O)-$(CH_2)_2$-S-L-S-CH_2-CH_2-CO-X-P,

D-Y-C(O)-$(CH_2)_2$-S-L-S-U-P,

D-Y-C(O)-$(CH_2)_2$-NH-L-S-CH_2-CH_2-CO-X-P,

D-Y-C(O)-$(CH_2)_2$-NH-L-S-U-P,

D-Y-C(O)-$(CH_2)_2$-S-L-NH-CH_2-CH_2-CO-X-P,

D-Y-C(O)-$(CH_2)_2$-S-L-NH-U-P,

D-Y-C(O)-$(CH_2)_2$-NH-L-NH-CH_2-CH_2-CO-X-P, or

D-Y-C(O)-$(CH_2)_2$-NH-L-NH-U-P,

wherein D is a pharmaceutically active moiety; n is 1 or 2; Y is O, NH, or N; L is a linear or branched linker; X is O or N; P is a water-soluble polymer comprising one or more conjugated unsaturated groups or a water-swellable polymer comprising one or more conjugated unsaturated groups; and U is the product of the addition of a nucleophile to an electrophilic group that is attached to said polymer.

6. (Original) The biomaterial of claim 5, wherein said cross-linking occurs in the presence of a polymer that does not contain a pharmaceutically active moiety, said polymer comprising two or more conjugated unsaturated groups, wherein said polymer is incorporated into said biomaterial.

7. (Previously Presented) The biomaterial of claim 5, wherein said cross-linking occurs in the presence of a polymer comprising two or more nucleophilic groups.

8. (Original) The biomaterial of claim 5, wherein said water-soluble or water-swellable polymer is selected from the group consisting of poly(ethylene glycol), poly(ethylene oxide), poly(vinyl alcohol), poly(acrylic acid), poly(ethylene-co-vinyl alcohol), poly(vinyl pyrrolidone), poly(acrylic acid), poly(ethyloxazoline), poly(ethylene oxide)-co-poly(propylene oxide) block copolymers, or water-soluble or water-swellable copolymers comprising these polymers, and their derivatives comprising conjugated unsaturated groups.

9. (Original) The biomaterial of claim 5, wherein said unsaturated groups are not activated as to undergo nucleophilic substitution reactions.

10. (Previously Presented) The biomaterial of claim 5, wherein said conjugated unsaturated groups are selected from the group consisting of acrylates, methacrylates, acrylamides, methacrylamides, acrylonitriles, and quinones.

11. (Previously Presented) The biomaterial of claim 5, wherein said crosslinking occurs in the presence of a molecule comprising an adhesion site, growth factor binding site, protease binding site, or enzymatically degradable site, and further comprises at least one strong nucleophile or a conjugated unsaturated group.

12. (Previously Presented) The biomaterial of claim 7, wherein said nucleophilic groups are selected from the group consisting of thiols and amines.

13. (Previously Presented) A method of forming a biomaterial, said method comprising the steps of:

(a) attaching a pharmaceutically active compound to a linker molecule or incorporating a nucleophilic amine or thiol into a pharmaceutically active compound,

(b) removing any thiol- or amine-protecting groups in said linker,

(c) coupling a thiol, amine, or alkene group in said linker or incorporated into said pharmaceutically active compound to a water-soluble polymer or a water-swellable polymer comprising two or more conjugated unsaturated groups by a conjugate addition reaction to form a precursor component, and

(d) cross-linking the uncoupled conjugated unsaturated groups in one or more of said precursor components.

14. (Original) The method of claim 13, wherein said cross-linking of said uncoupled unsaturated groups occurs at or near a site within the body of a mammal.

15. (Currently Amended) A method of treating or preventing a disease, disorder, or infection in a mammal by administering to said mammal a biomaterial comprising a pharmaceutically active moiety, wherein said biomaterial has an ester or amide bond onto said pharmaceutically active moiety, said bond having a half-life of between ~~1 hour~~ 1 day and 1 year in an aqueous solution at pH 7.4 and 37 °C.

16. (Original) The method of claim 15, wherein said mammal is a human.

17. (Previously Presented) The biomaterial of claim 5, wherein said pharmaceutically active moiety is derived from one of the group consisting of synthetic organic molecules, naturally occurring organic molecules, nucleic acid molecules,

biosynthetic proteins or peptides, naturally occurring peptides or proteins, and modified naturally occurring peptides or proteins.

18. (Previously Presented) The biomaterial of claim 5, wherein said pharmaceutically active moiety is paclitaxel, doxorubicin, 5-fluorodeoxyuridine, estradiol, 2-methoxyestradiol, or a derivative thereof.

19. (Previously Presented) The biomaterial of claim 5, wherein the half-life of the ester or amide bond onto said pharmaceutically active moiety is between 1 day and 9 months in an aqueous solution at pH 7.4 and 37 °C.

20. (Previously Presented) The biomaterial of claim 5, wherein the half-life of the ester or amide bond onto said pharmaceutically active moiety is between 2 days and 6 months in an aqueous solution at pH 7.4 and 37 °C.

21. (Previously Presented) The biomaterial of claim 5, wherein the half-life of the ester or amide bond onto said pharmaceutically active moiety is between 4 days and 3 weeks in an aqueous solution at pH 7.4 and 37 °C.

22. (Previously Presented) The method of claim 13, wherein said pharmaceutically active compound is derived from one of the group consisting of

synthetic organic molecules, naturally occurring organic molecules, nucleic acid molecules, biosynthetic proteins or peptides, naturally occurring peptides or proteins, and modified naturally occurring peptides or proteins.

23. (Previously Presented) The method of claim 13, wherein said pharmaceutically active compound is paclitaxel, doxorubicin, 5-fluorodeoxyuridine, estradiol, 2-methoxyestradiol, or a derivative thereof.

24. (Previously Presented) The method of claim 13, wherein the precursor component includes an ester or amide bond with a half-life between 1 hour and 1 year in an aqueous solution at pH 7.4 and 37 °C.

25. (Previously Presented) The method of claim 13, wherein the precursor component includes an ester or amide bond with a half-life between 1 day and 9 months in an aqueous solution at pH 7.4 and 37 °C.

26. (Previously Presented) The method of claim 13, wherein the precursor component includes an ester or amide bond with a half-life between 2 days and 6 months in an aqueous solution at pH 7.4 and 37 °C.

27. (Previously Presented) The method of claim 13, wherein the precursor component includes an ester or amide bond with a half-life between 4 days and 3 weeks in an aqueous solution at pH 7.4 and 37 °C.

28. (Previously Presented) The method of claim 15, wherein said pharmaceutically active moiety is derived from one of the group consisting of synthetic organic molecules, naturally occurring organic molecules, nucleic acid molecules, biosynthetic proteins or peptides, naturally occurring peptides or proteins, and modified naturally occurring peptides or proteins.

29. (Currently Amended) The method of claim 15, wherein said pharmaceutically active moiety is ~~paclitaxel,~~ doxorubicin, 5-fluorodeoxyuridine, estradiol, 2-methoxyestradiol, or a derivative thereof.

30. (Previously Presented) The method of claim 15, wherein the bond has a half-life between 1 day and 9 months in an aqueous solution at pH 7.4 and 37 °C.

31. (Previously Presented) The method of claim 15, wherein the bond has a half-life between 2 days and 6 months in an aqueous solution at pH 7.4 and 37 °C.

32. (Previously Presented) The method of claim 15, wherein the bond has a half-life between 4 days and 3 weeks in an aqueous solution at pH 7.4 and 37 °C.

33. (Previously Presented) A pharmaceutically active compound of the formula D-O_2C-$(CH_2)_n$-SH or D-N(O)C-$(CH_2)_n$-SH, wherein n is 1 or 2 and D is a pharmaceutically active moiety.

34. (Previously Presented) The pharmaceutically active compound of claim 33 further comprising at least one polymer cross-linked to the pharmaceutically active compound by a conjugated addition reaction between a thiol group of the pharmaceutically active compound and a conjugated unsaturated group of the polymer.

35. (Previously Presented) A method of forming a biomaterial, said method comprising the steps of:

(a) attaching a pharmaceutically active compound to a linker molecule or incorporating a nucleophilic amine or thiol into a pharmaceutically active compound;

(b) coupling the thiol or amine in said linker or incorporated into said pharmaceutically active compound to a polymer comprising two or more conjugated unsaturated groups by a conjugate addition reaction to form a precursor component; and

(c) cross-linking the uncoupled conjugated unsaturated groups in one or more said precursor components.

36. (Previously Presented) The method of claim 35, wherein said cross-linking occurs at or near a site within the body of a mammal.

37. (Previously Presented) A method of forming a biomaterial, said method comprising the steps of:

(a) attaching a pharmaceutically active compound to a linker molecule or incorporating a nucleophilic amine or thiol into a pharmaceutically active compound;

(b) coupling the thiol or amine in said linker or incorporated into said pharmaceutically active compound to at least a first polymer comprising two or more conjugated unsaturated groups by a conjugate addition reaction to form a precursor component;

(c) providing at least a second precursor comprising nucleophilic groups; and

(d) cross-linking the conjugated unsaturated groups of the precursor of step b) to the nucleophilic groups of the precursor of step c) by a conjugated addition reaction.

38. (Previously Presented) The method of claim 37, wherein said cross-linking occurs at or near a site within the body of a mammal.

39. (Previously Presented) The method of claim 38, wherein said mammal is a human.

40. (Cancelled)

41. (Previously Presented) The method of claim 15, wherein said biomaterial is cross-linked.

42. (Previously Presented) The method of claim 15, wherein said ester or amide bond is α or β to a secondary amine or a thioether.

43. (New) The method of claim 15, wherein said pharmaceutically active moiety is paclitaxel or a derivative thereof.